

Northwest Africa 5153

Polymict fragmental breccia

50.4 g



Figure 1: Chips of NWA 5153 with 1 mm scale bars below (photo courtesy of R. Korotev).

Introduction

Northwest Africa 5153 was found in 2007, and consists of a 50.4 g stone (Weisberg et al., 2008). It has an aeolian modified dark gray to reddish brown fusion crust (Weisberg et al., 2008). Interior is very fresh and lacks alteration veins.

Petrography, mineralogy, and chemistry

The breccia consists of a diversity of highland lithologies and Mare basalts and glasses. Highland components include cataclastic gabbro, troctolite, fragments of granophyric intergrowths of K-feldspar, felsic glasses and silica. Mare components include ophitic pigeonite and olivine basalts. The bulk composition of the sample includes $\text{Na}_2\text{O} = 0.476$ wt %; $\text{Sc} = 25.6$ ppm; $\text{Cr} = 1963$ ppm; $\text{FeO} = 12.72$ wt %; $\text{Ni} = 150$ ppm; $\text{Co} = 42.4$ ppm and $\text{Sr} = 132$ ppm (Weisberg et al., 2008; Korotev et al., 2009a,b), and illustrates that this sample is somewhat more enriched in REE and alkalis than, but equal in Sc to, the NWA 2995 pairing group (Fig. 2).

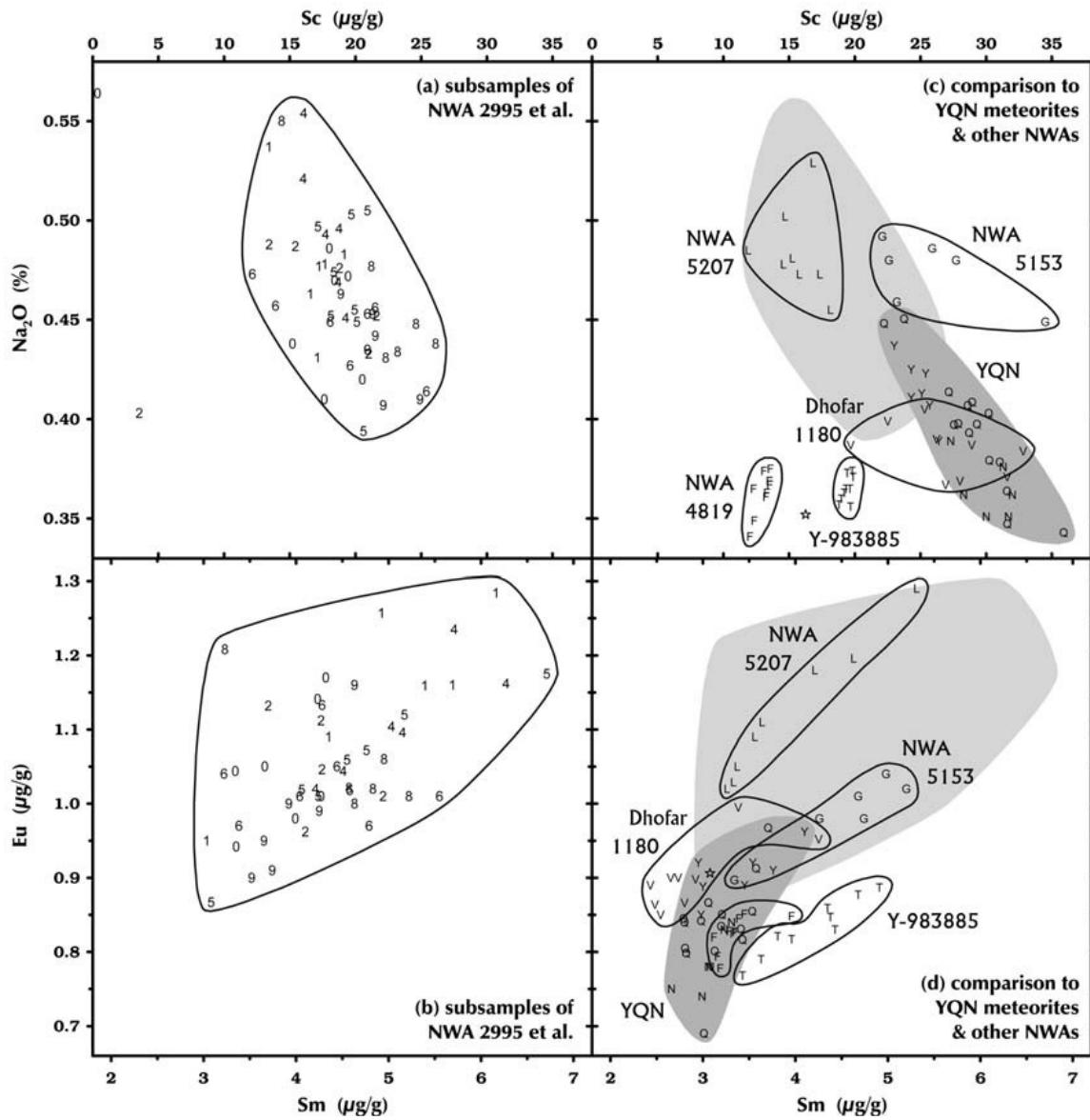


Figure 2: comparison of NWA 5153 bulk composition to other polymict lunar meteorite breccias, illustrating its distinct composition with slightly higher alkalis and REE compared to the YQN pairing group (Yamato, QUE, NWA 2995 pairs; Korotev et al., 2009b).

Radiogenic age dating and Cosmogenic isotopes and exposure ages

None yet reported.

Table 1a:Chemical composition of NWA	Ru
5153	Rh
	Pd ppb
<i>reference</i>	1
<i>weight</i>	20-60
<i>technique</i>	a
	Ag ppb
	Cd ppb
	In ppb
	Sn ppb
SiO ₂ %	46.6
TiO ₂	0.73
Al ₂ O ₃	17.3
FeO	12.7
MnO	0.18
MgO	8.95
CaO	12.7
Na ₂ O	0.48
K ₂ O	0.11
P ₂ O ₅	0.11
S %	
sum	99.5
	Sb ppb
	Te ppb
	Cs ppm
	Ba
	La
	Ce
	Pr
	Nd
	Sm
	Eu
	Gd
	Tb
	Dy
	Ho
Sc ppm	25.6
V	
Cr	1960
Co	42.4
Ni	150
Cu	
Zn	
Ga	
Ge	
As	<1.1
Se	0.14
Rb	<6
Sr	132
Y	
Zr	123
Nb	
Mo	
	technique (a) EMPA, (b) ICP-MS, (c) INAA (d) XRF

**Table 1b. Light and/or volatile elements
for NWA 5153**

Li ppm	
Be	
C	
S	
F ppm	
Cl	
Br	0.33
I	
Pb ppm	
Hg ppb	
Tl	
Bi	

References: 1) Korotev et al. (2009b)

K. Righter – Lunar Meteorite Compendium - 2010